Frequently Asked Questions on the WMO Unified Data Policy Resolution

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1. Why is WMO updating its Data Policy?

The last decades have seen explosive growth in the demand for weather, climate and water monitoring and prediction data to support essential services needed by all sectors of society both to help foster economic prosperity and to face important issues such as climate change, concerns about food security, and increasing frequency and impact of extreme weather.

The free and unrestricted exchange among all WMO Members of observational data from all parts of the world and of other data products must be updated and strengthened to accommodate this growing demand. At the same time, equitable access to the improved data products that will result from this is needed in order to ensure that no Member is left behind. As the responsibilities of the National Meteorological and Hydrological Services (NMHSs) continue to expand, a growing list of application areas beyond the traditional weather, climate and water activities need to be supported by WMO observing, data exchange and modelling systems. WMO data policy must therefore evolve to accommodate and integrate areas such as atmospheric composition, oceans, cryosphere and space weather.

2. Why have global needs and demands for WMO data evolved?

The success of weather and climate monitoring and prediction and the rapidly growing demands for additional information about the impact of weather and climate and related events and phenomena have led to an equivalent growth in the need for data exchange. This is reflected in WMO's strategic adoption of an integrated Earth system approach to monitoring and predictions, and the data needs thus include, not only meteorological data, but data from adjacent Earth system domains and disciplines. In the interest of efficiency, consistency and transparency, WMO has decided to consolidate its data policy statements into a single, WMO Unified Policy on the exchange of Earth system data.

3. What is the Role of WMO Data Policy?

The role of the WMO Data Policy is to lay out the agreement between the WMO Members on the overall principles and scope of the international exchange of Earth system data.

Weather and climate are local in impact but global in nature - "Weather and climate know no boundaries". This reflects the fact that the Earth's atmosphere does not have horizontal boundaries, which means that all monitoring and prediction of weather and climate must be based on global modelling. Successful modelling in turn depends on continued access to an adequate supply of observations from all parts of the world. International data exchange is therefore vital to any attempt to understand and predict both the atmosphere and the climate system as a whole.

A primary aim with the establishment of WMO in 1951 was to create a coordination mechanism for the acquisition and international exchange of such data, as stated in the WMO Convention, Article 2(a) and 2(b). WMO's data policy, as currently articulated in the following three separate World Meteorological Congress resolutions: Resolution 40 (Cg-XII) - WMO Policy and Practice for the Exchange of Meteorological and Related Data and Products Including Guidelines on Relationships in Commercial Meteorological Activities; Resolution 25 (Cg-XIII) - Exchange of Hydrological Data and Products; and Resolution 60 (Cg-17) - WMO Policy for the International Exchange of Climate Data and

Products to Support the Implementation of the Global Framework for Climate Services; establishes the general framework for the international exchange of weather, climate and water data.

With the seamless, integrated approach to the Earth system now recognized as vital to the overall practice of meteorology and for critical weather, climate and related environmental services delivered by its Members, the WMO data policy must be appropriately framed to better support achievements of these objectives through the international exchange of certain weather, climate and related environmental data.

4. What are the benefits of the updated WMO Data Policy?

The proposed data policy update will stimulate and strengthen the exchange of observations from all domains and disciplines, which will enable significant progress in the Earth system modelling capabilities of the community, and will result in higher-quality model data products.

The data policy will also help provide free and unrestricted access to a much broader range of Earth system model data products for all Members, which will help them improve and broaden the range of the services provided to their constituencies.

5. What specific benefits will the updated WMO Data Policy provide for developing countries?

Increasing the number of observations that are shared internationally for use in global and regional Numerical Weather Prediction (NWP) models will help significantly improve the quality of these data products. This improvement will be felt everywhere on the globe, but it will be especially pronounced in areas where the current observational data coverage is poor, including many developing countries.

Improving the number of freely available model data products for all Members will help developing WMO Members in particular, dramatically improve the scope and the quality of weather and climate services they can provide to their constituencies.

6. What additional datasets will Members need to exchange under the Unified Data Policy, compared to the current status?

Due to the separate and complementary roles played by data policy and regulatory material, the WMO Unified Data Policy will in principle not in itself confer new obligations on Members to exchange data. The specific obligations to exchange certain data sets – labeled "core data" in the data policy text – are captured in the WMO technical regulations, not in the data policy itself. These obligations may change over time as the WMO technical regulations are updated, under the authority of Congress.

On the other hand, the group of entities participating in the data exchange is expected to be significantly broadened. The Unified Data Policy calls for data to be exchanged broadly among relevant stakeholders, whereas current WMO data policy statements – in particular, Resolution 40 (Cg-XII) refer more narrowly to the exchange between NMHSs.

When the draft text of the WMO Unified Data Policy resolution is submitted to Congress for its consideration, a detailed analysis and list of core data sets expected to be exchanged under the current regulations will also be presented to Congress for information. WMO plans to publish and maintain this list of core data sets and to keep it updated as technical regulations evolve.

7. What will WMO do to help Members meet their obligations under the Unified Data Policy?

WMO is prepared to support its Members in their implementation of the Unified Data Policy in a number of ways, including:

- Further development of technical systems, such as WIS 2.0 and S-GDPS, aimed at facilitating the exchange of data, especially taking into account the needs and technical capabilities of developing Members;
- Resource mobilization and subsequent support efforts, delivered via mechanisms such as Climate Risk and Early Warning Systems (CREWS) and peer-to-peer interaction, which will aim to strengthen the ability of developing Members to fully benefit from the increased amount of prediction and monitoring data that will be available to them from the updated Data Policy;
- Coordination of direct technical and financial support via the Systematic Observations Financing Facility (SOFF) for the international exchange of Global Basic Observing Network (GBON) observations for global NWP;
- Support for and participation in national and regional events, involving both NMHSs and other government, research and private sector entities, aimed at improving the uptake of the WMO Data Policy;
- Preparation of outreach material explaining the background, scope and benefits of WMO Data Policy.

8. Why does the updated WMO Data Policy resolution provide so few detailed requirements for Members?

The data policy represents a general commitment by Members to exchange certain data for certain purposes. In order to allow the implementation of the policy to evolve and expand over time as needed, Annex 1 of the resolution identifies only the relevant domains, disciplines, and broad categories of data sets covered by the policy and within each of these, references to technical regulations will point to the detailed requirements. Specific details on which data sets belong to which categories under the policy are – or, in some cases, will be at some point in the future – captured in the relevant WMO technical regulations.

9. How does the updated WMO Data Policy differ from existing WMO data policies?

The proposed update will provide a more comprehensive, flexible and implementable approach to data exchange for the twenty-first century.

Comprehensive: Currently, existing WMO data policy is laid out in three separate Congressional resolutions covering three domains: Resolution 40 (Cg-XII) covering weather, Resolution 25 (Cg-XIII) water and Resolution 60 (Cg-17) climate. In contrast, the WMO Unified Data Policy resolution covers seven domains – all WMO Earth system data - in a single policy statement. Additionally, the new policy expands from addressing just NMHSs to taking account of all partners, including the private sector and academia.

Flexible: The specific details on what are considered "core data" and "recommended data" can be updated via updates to technical regulations, rather than requiring an amendment to the policy resolution itself. Updates to technical regulations are still subject to Congress approval, but due to their narrow focus and limited scope, the approval process is generally significantly less involved than for data policy.

Implementable: Of the existing three data policy resolutions, only one – namely Resolution 40 (exchange of weather data) – contains language that requires Members to exchange the minimum data required for effective decision-making at all levels to underpin essential public services. The new policy will over time allow data across the Earth system to be labeled as "core data".

10. How will the relationship between the public and private sectors be affected by the updated WMO Data Policy?

The proposed data policy, in principle affects all providers and users of Earth system data, including NMHSs, other relevant public sector agencies, academia and the private sector.

For the public sector, the category of "core data" protects the universal free and unrestricted access to data that are vital for the overall practice of meteorology and for critical weather, climate and related environmental services. This applies to all "core" data acquired through the public sector, whether from infrastructure owned and operated by Members or from data acquired from other sources for public sector use.

For the private sector, the immediate benefit will be having access to a much broader suite of Earth system monitoring and prediction data, which will allow the private sector to generate value added products and provide tailored services to specific users. The policy further provides clarity on which types of data must be exchanged ("core data") and which data may be subject to conditions ("recommended data"), such as licenses or fees for access.

This comprehensive approach will provide additional channels for data exchange that will greatly enhance the effectiveness of weather, climate and water services, and therefore enrich the benefits of these services for users and stakeholders around the globe.

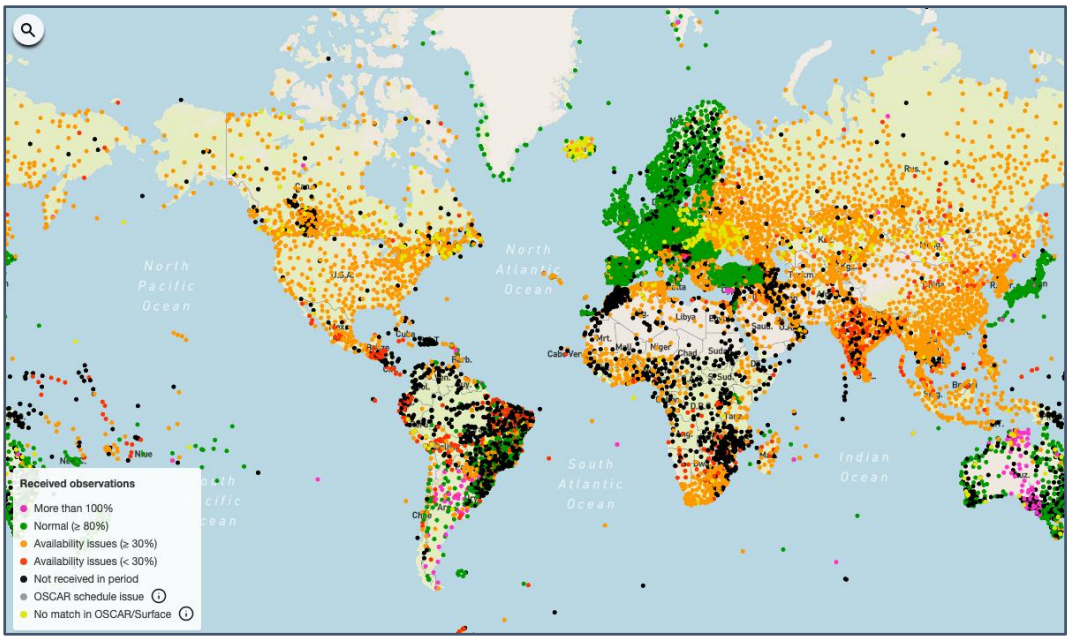
11. How will the updated WMO Data Policy affect the research community?

The research community plays an important, dual role in the WMO community – both as data provider and as data user. The new data policy ensures free and unrestricted access for the research community to a broad range of core Earth system data, and it recommends granting free and unrestricted access to all Earth system data for the research community. It further recognizes the need for attribution of source of Earth system data made available by the research community for operational purposes.

12. What data are countries already exchanging?

Members are currently exchanging a broad variety of data among themselves, but outdated policy statements and the difficulty of maintaining and updating them have led to the gradual erosion of exchange and is increasing the risk of fragmentation in some areas. The map below from the WMO Integrated Global Observing System (WIGOS) Data Quality Monitoring System provides an example of the surface-based observations currently exchanged by Members. This example shows that the current interpretation and implementation of WMO's data policy is highly inconsistent between Members. This inconsistency holds back the WMO community from fully exploiting the potential of its

data and science, most notably the potential of NWPs to meet the surging demands for high-quality data products.



Surface pressure observations received by global NWP Centers on Apr 27 2021, 12Z)

(source: WIGOS Data Quality Monitoring System)

13. Data are our main asset, why should we open them to everybody?

Numerous economic analyses undertaken by governments and international organizations in various parts of the world have reached the same conclusion, namely that by far the most effective way to reap the socioeconomic benefits of Earth system data is to make sure that they get into the hands of as many users as possible. This is best accomplished via open data policies, such as the one currently being discussed by WMO. Public and private entities can then use the data as a basis for their own specific application areas, and/or use them as a basis for generating additional value added products and services, both of which further broaden the reach of the data and increase their overall contribution to socioeconomic benefits.

Specifically for observations, exchange is a must, not a choice, in order for them to have impact. The backbone of all weather and climate monitoring and prediction is global NWP. In order to start a NWP run, vast amounts of observations are assimilated into an Earth system model to build a global estimate of the "initial weather". This process is akin to assembling a jigsaw puzzle depicting a snapshot of the instantaneous, worldwide weather, and the observations are the pieces of the puzzle. Imagine a puzzle consisting of 1000 pieces, with 100 pieces located in the US, 200 in Russia, 50 in South Africa, one or two in Singapore, etc. In order for anyone to put that puzzle together and see the image, all pieces would need to be made available in one place, and that is why international exchange of observations in particular is vital for meteorology. Observations that remain at the observing location simply add no value to any prediction efforts.

Observations that are not even shared across sectors at a national level will limit the societal and economic benefits that might otherwise be achieved.

14. Will Members have a period of time over which to adapt their national legislation and infrastructure?

There is no set time period for the implementation of the policy. The policy lays out the agreement between the WMO Members on the overall principles and scope of the international exchange of Earth system data. Members have the role and responsibility to adapt to and implement the policy, as both the WMO Convention and the draft text of the WMO Unified Data Policy recognize the sovereign rights of the Members to decide which data will be exchanged, and how.

15. The unification of WMO Data Policy implies new partnerships within each country; how will the WMO support Members in these actions?

While the national implementation of the data policy is the sole prerogative of Members, WMO will actively support Member governments, including NMHSs, in any way it can to articulate the benefits of the data policy via outreach materials and information events. WMO also will support the sharing of experience among Members and make exemplars of successful national implementations available as needed.

16. What is the plan for the implementation of the updated WMO Data Policy?

If/when the Unified Data Policy resolution is adopted by Congress, the full WMO community will be involved in implementation, from adherence to already adopted technical regulations to the progressive update of technical regulations. The Executive Council will oversee overall policy implementation, with support from the WMO Secretariat. The WMO Infrastructure Commission will lead each of the seven domains/disciplines to upgrade their relevant technical regulations, with input and consultation with Members. The Services Commission will reach out to seek engagement of concerned partners on further application and implementation of the policy. Regional Associations have very important and active roles to play, for example in ensuring identification and participation of appropriate regional experts in the work of the technical commissions, in engaging and encouraging Members on data policy matters, and in the identification of capacity development needs. Actual implementation is up to the Members.

17. Whom could I ask at the WMO Secretariat for support to implement the Unified Data Policy in my country/Service?

Within the WMO Secretariat, the Infrastructure Department leads development of data policies, practices, and regulations, while the Member Services Department and its Regional Offices provide general support and services.

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